PROJECT 2B

Anderson-Cottonwood Irrigation District Conjunctive Use Program

1. Project Description

Project Type:	Conjunctive water management
Location:	Shasta and Tehama counties
Proponent:	Anderson-Cottonwood Irrigation District (ACID or District)
Project Beneficiaries:	GCID, in- and out-of-basin users, environment, Delta
Total Project Components:	Short-term components, installation of production wells
Potential Supply:	10,000 acre-feet per year (ac-ft/yr)
Cost:	$5.1 million
Current Funding:	$300,000 (CALFED grant)
Short-term Components:	Monitoring wells, model development, pilot well development
Potential Supply (by 2003):	5,000 ac-ft/yr
Cost:	$3 million
Current Funding:	$300,000 (CALFED grant)
Implementation Challenges:	Groundwater data analysis, water rights implications, environmental regulatory compliance
Key Agencies:	ACID, Shasta and Tehama counties, local landowners, U.S. Bureau of Reclamation (USBR), California Department of Water Resources (DWR), environmental interest groups, Sacramento-San Joaquin Delta

Summary

ACID is a Sacramento River Settlement Contractor. The district has natural flow rights of 165,000 ac-ft / yr from the Sacramento River and a contract of 10,000 ac-ft / yr from the Central Valley Project (CVP). ACID diverts water from the Sacramento River at its main diversion at Caldwell Park in Redding and from a small pump station below the South Bonnyview Bridge. The water is conveyed to agricultural water users through ACID's 35-mile-long Main Canal and its lateral canals. The Main Canal extends south from Redding into northern Tehama County. The ACID distribution system is shown on Figure 2B-1.

This project would provide new groundwater production wells adjacent to the ACID canal. The wells would be operated during dry years to reduce surface water diversions from the Sacramento River. The surplus surface water would be used to augment municipal and irrigation supplies in surrounding communities, and export to the Delta.

Phase 1 of the project includes the construction of monitoring wells at up to 12 locations along the ACID canal. These wells determine conjunctive use potential and associated potential impacts. Phase 2 would include construction of two or three production wells accompanied by additional monitoring and evaluation, followed by a full-scale program to produce a 10,000 ac-ft / yr supplemental supply. After Phase 2, the District would use monitoring wells to evaluate the potential to expand the scope of the program to a maximum of 40,000 ac-ft / yr for beneficial water uses elsewhere in the basin.

Short-term Component

The short-term component is broken into two phases, the first would perform a study of the conjunctive use area. The second phase would be to install pilot production wells to test the model created in Phase 1, and at the same time would provide water to users in the District.

Phase 1 – Groundwater Monitoring

Phase 1 includes developing the schedule and rates of groundwater pumping, location and depths of monitoring wells and recovery wells, and criteria for evaluating the project. The 12 proposed monitoring wells would be located along the existing ACID Main Canal and canal laterals. All of the wells would be located in Shasta County, between the cities of Anderson and Cottonwood, west of the Sacramento River. These wells would be constructed in strategic areas near existing large-diameter production wells to monitor pumping influences from these wells. The data from these monitoring wells would be used to refine the existing groundwater model of the basin. The groundwater model would be used in the next phase of the conjunctive use program.

Phase 2 – Pilot Production Wells

The aquifer that is proposed to be used for this conjunctive use project is very prolific. In the area proposed for the wellfield, the alluvial aquifer is at least 1,200 feet thick and exceeds 2,000 feet in some locations. The aquifer consists of interbedded alluvial deposits consisting principally of sand and gravel. Recharge of the aquifer would occur naturally by deep percolation precipitation, deep percolation of applied water, seepage from the ACID canal, and interception of flowing groundwater. Since the recharge occurs naturally, the availability and reliability of recharge is excellent.

The local groundwater and surface water quality is excellent. Both groundwater and surface water are currently used for irrigation of crops and pasture. Most of the applied water comes from diversions of the Sacramento River, which contains a total dissolved solid level of 200 milligrams per liter (mg / L).

Phase 2 would also include the installation of six pilot production wells. From current acquifer information, the wells are predicted to produce up to 5,000 ac-ft / yr when complete. The groundwater model would be tested with the new production wells, and the model would determine if the rest of the project is feasible.

Long-term Component

The primary purpose of this evaluation is to evaluate the potential for this project to provide water supply benefits in the short-term (by end of 2003). As part of this initial evaluation, potential long-term components of the proposed project (defined as any part of the project proceeding past or initiated after December 2003) have been considered on a conceptual level. Further consideration and technical evaluation of long-term component feasibility and cost will occur as the next level of review under the Sacramento Valley Water Management Agreement. Long-term-component project descriptions are included in these short-term project evaluations only as a guide to the reader to convey overall project intent.

Once the groundwater modeling is finished and tested, the next step would be the completion of the production wells. The area is expected to have capacity for 13 production wells producing 1,000 gpm each. The wells are predicted to produce a total of 10,000ac-ft/yr.

2. Potential Project Benefits/Beneficiaries

Local Benefits

The project would have a direct positive impact on the reliability and flexibility of the local water supply by supplementing CVP surface water supplies in surrounding communities. CVP supplies would be subjected to substantial cutbacks with increasing frequency following full implementation of the Central Valley Project Improvement Act (CVPIA).

Delta Water Quality

The project would provide environmental benefits primarily through reduced Sacramento River diversions and increased in-stream flows during critical dry years and the peak water demand season of mid-summer. Since the project would be located at the head of the Sacramento watershed below Shasta Dam, the full length of the river could potentially benefit from these reduced diversions. The reduced diversion would translate directly in a potential increase in the Delta supply. Surplus water would be stored in the aquifer during wet years, and exported to the Delta during dry years. Delta outflow demands are not directly influenced by this project. The increased flow of good-quality water would increase the water quality in the Delta.

3. Project Costs

The cost opinions shown, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation from the information available at the time of the estimate. It is normally expected that cost opinions of this type, an order-of-magnitude cost opinion, would be accurate within +50 to -30 percent. Project costs were developed at a conceptual level only, using data such as cost curves and comparisons with bid tabs and vendor quotes for similar projects. The costs were not based on detailed engineering design, site investigations, and other supporting information that would be required during subsequent evaluation efforts.

The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, imple-

mentation schedule, continuity of personnel and engineering, and other variable factors. As a result, the final project costs will vary from the opinions presented here. Because of these factors, project feasibility, benefit / cost ratios, risks, and funding needs must be carefully reviewed prior to making specific financial decisions or establishing project budgets to help ensure proper project evaluation and adequate funding.

Tables 2B-1 and 2B-2 are planning-level estimates of project costs.

TABLE 2B-1
Planning-level Project Costs: Short-term
Anderson-Cottonwood Irrigation District Conjunctive Use Program

Description	Quantity	Units	Unit Price ($)	Total Cost (x 1,000)	Assumptions
Monitoring Wells	12	Wells	50,000	$600	12 wells at 100 ft
Production Wells	6	Wells	200,000	$1,200	16 in casing, 500 ft depth
			Subtotal ->	**$1,800**	
			Contingencies and Allowances (30%) ->	$540	
			Total Construction Costs ->	$2,340	
			Environmental Mitigation (5%) ->	$120	
			Engineering, Environmental, Construction Management and Admin. (25%) ->	$585	
			Short-term Project Cost ->	**$3,045**	

TABLE 2B-2
Planning-level Project Costs: Long-term
Anderson-Cottonwood Irrigation District Conjunctive Use Program

Description	Quantity	Units	Unit Price ($)	Total Cost (x 1,000)	Assumptions
Production Wells	6	Wells	200,000	$1,200	16 in casing, 500-ft depth
			Contingencies and Allowances (30%) ->	$360	
			Total Construction Costs ->	$1,560	
			Environmental Mitigation (5%) ->	$80	
			Engineering, Environmental, Construction Management and Admin. (25%) ->	$390	
			Long-term Project Cost ->	**$2,030**	
			Short-term Project Cost ->	$3,045	
			Long-term Project Cost ->	$2,030	
			Total Project Cost ->	**$5,075**	

4. Environmental Issues

As noted in Section 2, this project is anticipated to provide benefits in the form of increased water supply, more flexible water management, and improved water quality – all of which could improve the greater Sacramento River ecosystem.

Project implementation would also result in impacts to the environment, notably through the artificial manipulation of groundwater levels. In some areas of the state, these types of projects have resulted in public concern and controversy, which tends to heighten scrutiny of the environmental effects of such projects. Efforts to address these concerns are noted in Section 5, Implementation Challenges. Construction-related impacts would also occur prior to project implementation. Construction-related impacts would be similar to other, common construction projects that occur near seasonal drainages and waterways. Because of the controversial nature of the groundwater and Endangered Species Act (ESA) issues, it is likely that the appropriate level of environmental documentation necessary for this project would, at a minimum, be a Mitigated Negative Declaration.

Implementation of the project would also require issuance of permits from various regulatory agencies. Following is a summary of the likely permitting requirements. Additional permitting requirements may be identified pending further project refinement.

- **State Water Resources Control Board—**Applications for new water rights and changes in point of diversion would be required.
- **Regional Water Quality Control Board—**Depending upon project configuration and location, Water Quality Certification under the federal Clean Water Act may be required for construction.
- **Federal and State Endangered Species Act—**Consultation with state and federal resource agencies (e.g., USFWS, NMFS, CDFG) may be required to protect special-status species and their habitat.
- **State Lands Commission—**Project would need to consult with State Lands Commission on the public agency lease / encroachment permitting for use of state lands.
- **Advisory Council on Historic Preservation—**Consultation under Section 106 of the National Historic Preservation Act may be necessary if historical resources are affected by construction of the project.
- **Local governments and special districts—**Specific agreements for rights-of-way, encroachments, use permits, or other arrangements may need to be made with local entities in the vicinity of the project.

A draft California Environmental Quality Act (CEQA) environmental checklist has been prepared for this proposed project and is included as an attachment to this evaluation. The checklist provides a preliminary assessment of the environmental areas of concern, as well as areas that are not likely to be of concern, associated with this project. The checklist would be finalized as part of the environmental compliance required for project implementation.

5. Implementation Challenges

Key Stakeholders

Table 2B-3 lists the key stakeholders that are expected to be associated with or impacted by this conjunctive use project. Also, listed are the anticipated roles, concerns, and/or issues corresponding to each stakeholder.

TABLE 2B-3
Stakeholder Roles and Issues
Anderson-Cottonwood Irrigation District Conjunctive Use Program

Stakeholder	Role/Concerns/Issues
Anderson-Cottonwood Irrigation District	• Project components and direct beneficiary
Shasta County	• Significant interest in regional drainage and flooding
Tehama County	• Significant interest in regional drainage and flooding
	• Early stages of groundwater management and developing county objectives
Local landowners	• Impacts on groundwater levels both short and long term
USBR, DWR	• Water rights
Environmental interest groups	• In-stream flow impacts, fishery impacts, land use, and water quality impacts
Sacramento-San Joaquin Delta	• Possible increased inflows

The project implementation would occur in two stages, both of which would have significant challenges. Many of these challenges would be inherent to any project of this size and complexity. The following lists some of the implementation challenges anticipated to be associated with this project.

Public Perception

Landowners have significant concern regarding possible groundwater overdraft. While the aquifer recharge aspects of this project may go a long way to alleviate these concerns, overdraft likely would remain a concern throughout the various stages of this project from feasibility analysis through construction and very likely continue thereafter. Monitoring and modeling of groundwater levels would not only be an essential part of this project technically, but also politically. Further, public concern accompanies any water delivery project during these water-tight times with regard to whom any project may or, just as importantly, may not benefit. As a result, many counties have passed ordinances and set numerous groundwater management objectives. To that end, the county has set strict guidelines for such water management programs as water transfers that dictate the priority of transfers taking into consideration primarily the intended recipient of the water.

Coordination among Public and Private Entities

Strong coordination would be required among local, state, and federal entities such as CDFG, RWQCB, and DWR. The governmental agencies would have strong interests associated directly with the project and indirectly as it may affect other interests in the area. It is highly probable that because of the complexity and far-reaching implications of the project that competing interest may arise. Reliable communication and integrated coordination would be required to create a successful project.

Coordination between Concurrent Projects

Numerous parties are examining similar projects throughout the valley. To optimize the effectiveness of these projects, coordination between the projects would be required from the onset. The strongest motivation for such an effort is three-fold: (1) to avoid duplication of effort and as a result efficiently utilize available funds, (2) to avoid the nullification of project benefits through competing projects, and perhaps most importantly, (3) to optimize the benefits of these projects to the watershed.

Lack of Sufficient Groundwater Data

In many areas, there is limited groundwater information available, or the information that is available is unreliable. The sudden increase in short-term pumping during peak months may have an impact on the stability of the groundwater level. Implementation of Phase 1 would help refine the existing groundwater model of the basin.

Groundwater Data Analysis

It would be necessary to establish working parameters for any groundwater use program. Monitoring and possibly modeling would be key components to determining a safe yield quantity for a successful and publicly acceptable program.

Water Rights Implications

ACID participation would be predicated on the operation of such a program and would occur within the guise of the District's existing water rights. Decreases in surface water diversions would be anticipated in some years, while full contract quantities would be used in other years.

Environmental Regulatory Compliance

Extensive environmental documentation, surveying, monitoring, and permitting would be required for this project. Habitat for known ESA-listed species such as the valley elderberry longhorn beetle and the giant garter snake is present within the project area. Project scheduling would have to reflect environmental regulatory requirements including any limitation on windows of construction.

Land Acquisition

It is probable that land would have to be acquired for the monitoring wells and production wells. Some landowners may be resistant to the land purchases.

6. Implementation Plan

Extensive engineering and environmental investigations are necessary to further evaluate this project. The following major steps would be required to implement the project. Each step depends on successful completion of the previous supporting steps and findings that support further actions. Figure 2B-2 shows an assumed implementation schedule based on typical time requirements for each step in a project of this scale.

Task 1.1 Groundwater modeling—The existing groundwater model is calibrated, and accurately replicates current and past groundwater levels in the basin. However, with the significant increases in short-term pumping, some uncertainty surrounding the model exists. To address the uncertainty of the model, the following key parameters would be evaluated:

- Increased canal seepage
- Increased capture of deep percolation
- Mitigation of high groundwater levels
- Impacts of surface streams
- Drawdown in groundwater levels and the effects on nearby wells
- Effects of riparian habitat
- Cost of pumped groundwater

The key result of this task would be to identify those properties of the hydrologic system that cause the greatest effect on project results.

Task 1.2 Monitoring and data collection—The data collection and monitoring would emphasize the use of existing wells and facilities to reduce costs. The data collection and monitoring would focused on reducing the uncertainty identified above. The effects of pumping would be evaluated by monitoring from several large municipal and industrial wells (City of Anderson, Shasta Paper Mill, Wheelabrator Energy, and the Cottonwood Water District).

The elements of this phase (monitoring and data collection) include:

- Location, design, and construction details for the new monitoring wells
- Identification of existing wells that could be used to supplement the monitoring program
- Identification of existing municipal, industrial, and agricultural production wells that significantly affect groundwater levels in the area
- Planned monitoring techniques and frequency for the monitoring and production wells
- Installation of flow monitoring devices on existing production wells
- Installation of monitoring devices to record fluctuation in groundwater levels in new and existing wells during maximum demand for a period of up to 8 months

Monitoring would continue through the summer months and into the fall to document the rebound of water levels after summer pumping.

Task 1.3 Model re-calibration—Using the above data, the provided three dimensional model would be re-calibrated to simulate the effects of short-term pumping. The model would replicate the response of the aquifer to the stresses imposed by municipal, industrial, and agricultural wells. This refinement would improve the model's ability to forecast future groundwater levels.

Task 2.1 Environmental assessment/environmental impact report (EA/EIR)—Phase 2 of the implementation plan would complete the required NEPA / CEQA investigation and documentation. Specific permitting requirements would be addressed.

Task 2.2 Installation of conjunctive use wells—Up to six large-diameter production wells would be installed and tested within the first 2 years of the project. The wells would be sited to utilize existing infrastructure as available(e.g., near existing monitoring wells and lateral extensions of the ACID Main Canal). Once the wells were installed they would be tested for up to 3 months, and the effects of pumping would be measured and compared against predicted responses from the groundwater model. Using the accumulated data, the model would be further refined to replicate the effects of pumping. The final report would include the final design for complete production wellfield construction and operation of the conjunctive use wellfield.

Task 2.3 Expansion of program—This task would include an incremental expansion of the pilot program to the full 10,000 ac-ft / yr conjunctive use program over a period of 4 to 5 years. It is expected that two to three new wells would be installed each year. The groundwater model would continually be refined throughout this period. The new wells would be located adjacent to existing ACID canals and laterals. Figure 2B-1 shows the potential layout of the wells.

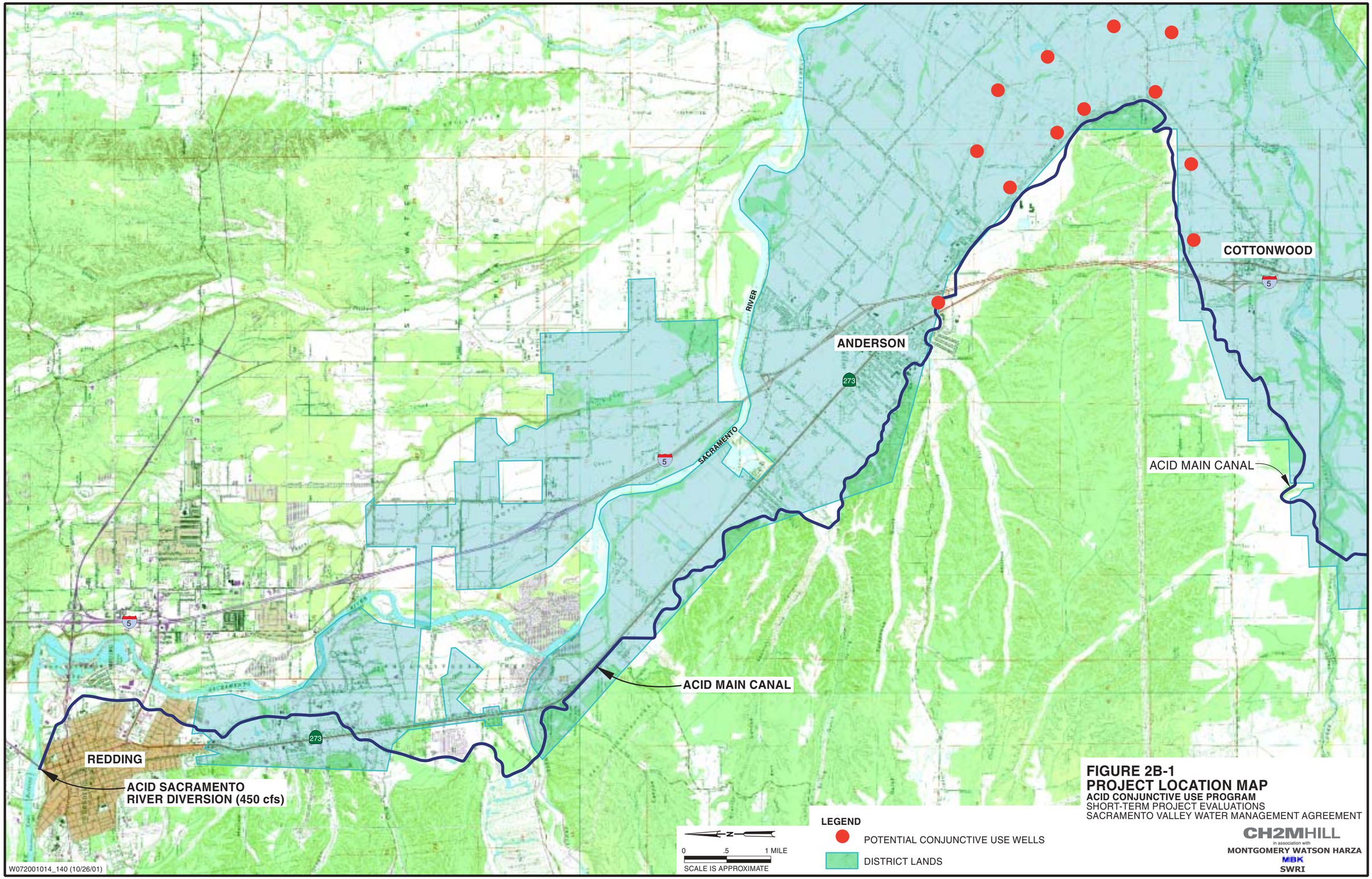
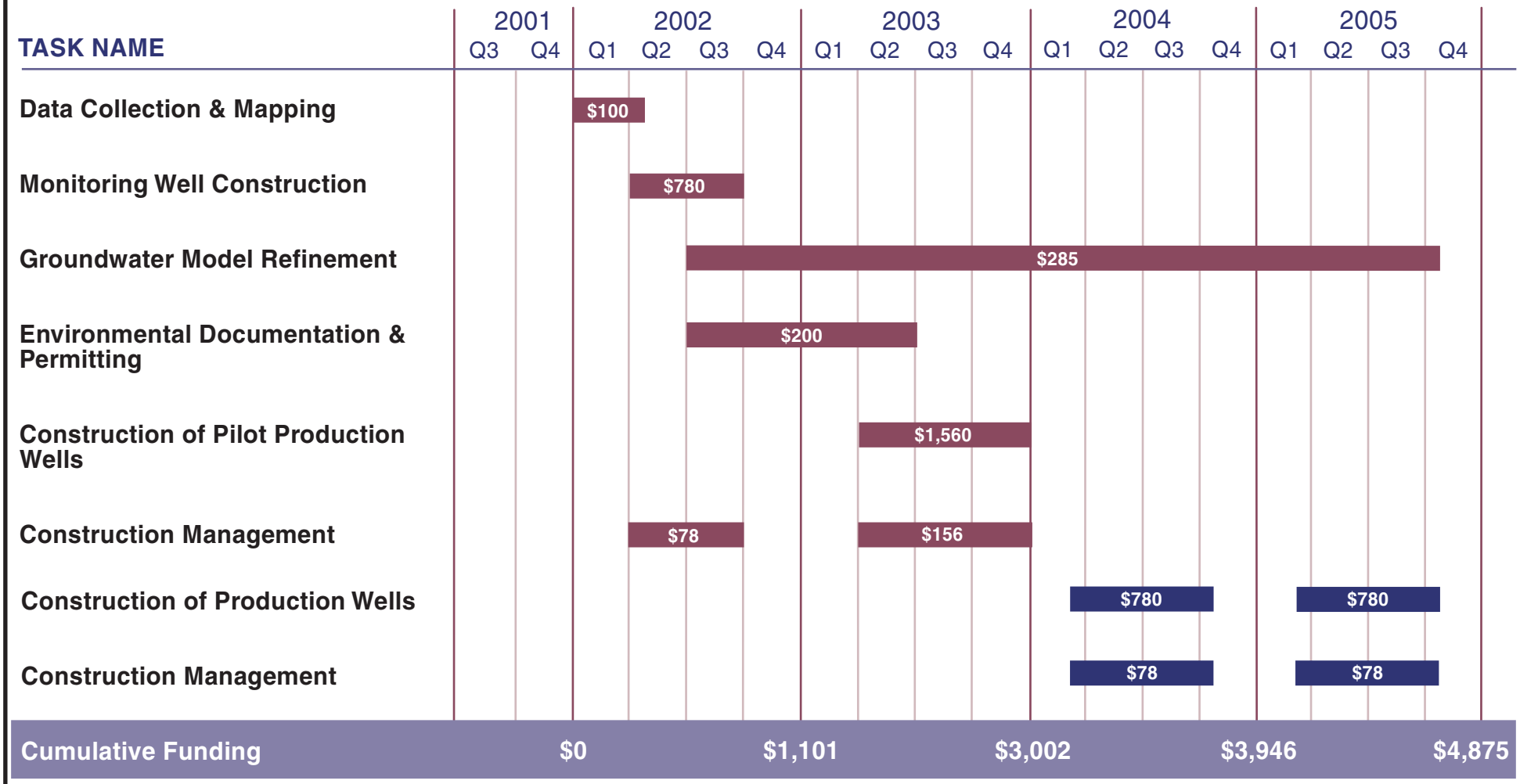


FIGURE 2B-1
PROJECT LOCATION MAP
ACID CONJUNCTIVE USE PROGRAM
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

CH2MHILL
in association with
MONTGOMERY WATSON HARZA
MBK
SWRI



LEGEND

SHORT-TERM

LONG-TERM

W072001014RDD_42(10/26/01)

FIGURE 2B-2
PRELIMINARY IMPLEMENTATION SCHEDULE
ACID CONJUNCTIVE USE PROGRAM
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

CH2MHILL
in association with
MONTGOMERY WATSON HARZA
MBK
SWRI

Project 2B—Draft CEQA Environmental Checklist

Project 2B—Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology / Soils
☐ Hazards & Hazardous Materials	☐ Hydrology / Water Quality	☐ Land Use / Planning
☐ Mineral Resources	☐ Noise	☐ Population / Housing
☐ Public Services	☐ Recreation	☐ Transportation / Traffic
☐ Utilities / Service Systems	☐ Mandatory Findings of Significance	

Determination:

(To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

_____ _____

Printed Name For

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS—Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☒	☐	☐
Short-term impacts from increased noise and dust emissions could occur as a result of construction. Mitigation measures implemented for noise and air quality would reduce any impacts to a less than significant level.				
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒
II. AGRICULTURE RESOURCES—Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☒	☐
III. AIR QUALITY—Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
Increased air emissions could result from construction of the project. Implementation of best management practices (BMPs) during construction would reduce the amount of emissions, and reduce the impact to less than significant level.				
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES—Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act, (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or, impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?.	☐	☐	☒	☐
V. CULTURAL RESOURCES—Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
A significant impact would occur if a cultural resource were to be disturbed by activities associated with project development. In the event that an archaeological resource was discovered, appropriate measures would be undertaken to minimize any impacts.				
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
See response to V (a) above.				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
See response to V (a) above.				
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐
See response to V (a) above.				
VI. GEOLOGY AND SOILS—Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
VII. HAZARDS AND HAZARDOUS MATERIALS—Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
Construction equipment would require the use of potentially hazardous materials. The potential for significant hazardous material spill would be unlikely because of the limited amount of such materials that would be used onsite. If a spill or release of such materials were to occur, it could potentially be significant unless BMPs were implemented.				
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒
VIII. HYDROLOGY AND WATER QUALITY— Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
There is a potential for an increase of erosion and sedimentation from construction activity. This could be a significant impact and would require an erosion control plan and the implementation of BMPs to reduce any impacts to waterways in and around the project area.				
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).	☒	☐	☐	☐
There are serious concerns about the long-term draw-down of the groundwater table and land subsidence, particularly in dry years. Model development would help in determining the effects of increased groundwater pumping. The impact that groundwater withdrawal would have on existing groundwater supplies is as yet undetermined; however, it is potentially significant because of the complexity of the issue.				
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒
IX. LAND USE AND PLANNING—Would the project:				
a) Physically divide an established community?	☐	☐	☒	☐
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐
X. MINERAL RESOURCES—Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒
XI. NOISE—Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. *Short-term noise levels are expected to increase for the duration of construction. These noise increases would be temporary, and mitigation measures would be implemented to reduce any impact to a less than significant level.*	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XII. POPULATION AND HOUSING—Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
XIII. PUBLIC SERVICES—Would the project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services?	☐	☐	☐	☒
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☒	☐
XIV. RECREATION—Would the project:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒
XV. TRANSPORTATION/TRAFFIC—Would the project:				
a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☒	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Result in inadequate parking capacity?	☐	☐	☐	☒
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒
XVI. UTILITIES AND SERVICE SYSTEMS— Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐
XVII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐